

SECTION 08630

METAL-FRAMED SKYLIGHTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum skylight framing system.
- B. Skylight glazing.
- C. Fasteners, anchors, reinforcement, and flashings.

1.02 RELATED REQUIREMENTS

- A. Section 05120 - Structural Steel: Structural support framing for system.

1.03 REFERENCE STANDARDS

- A. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; American Architectural Manufacturers Association; 2003.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; American Architectural Manufacturers Association; 1998.
- C. ASTM A 36/A 36M - Standard Specification for Carbon Structural Steel; 2005.
- D. ASTM A 123/A 123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2002.
- E. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2007.
- F. ASTM B 209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]; 2007.
- G. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2008.
- H. ASTM B 221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2007.
- I. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.
- J. ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2006a.
- K. ASTM D 2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005.
- L. ASTM D 4479 - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007.
- M. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004.
- N. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2002.
- O. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000.

1.04 PERFORMANCE REQUIREMENTS

- A. Design and size components to withstand the following load requirements without damage or permanent set:
 - 1. Roof snow load: 20 lbf/sq ft.
 - 2. Wind Load: See General Structural Note "D" on Sheet S1.0 of the drawings
 - 3. Concentrated load at any location on framing: 250 lb.
 - 4. Measure performance by testing in accordance with ASTM E 330, using test pressure equal to 1.5 times the design wind load and 10 second duration of maximum load.
- B. Maximum allowable deflection of any glazing support member: 1/180 of span.
- C. Design system to limit stress on structural glazing adhesive to 20 percent of tested tensile adhesion and maximum compression or elongation to 25 percent of neutral dimension.
- D. Design system to accommodate thermal expansion and contraction over ambient temperature range of 100 degrees F, dynamic loading and release of loads, and deflection of structural support framing without damage to skylight system components or loss of weathertightness.
- E. Limit air infiltration through assembly to 0.06 cu ft/min/sq ft for glazed area, measured at a reference differential pressure across assembly of 1.57 psf in accordance with ASTM E 283.
- F. Water Leakage: None, when measured in accordance with ASTM E 331 at a test pressure difference of 2.86 lbf/sq ft.
- G. Design and fabricate skylight system to prevent harmonic vibration, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.

1.05 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's specifications, standard details, and installation requirements.
- C. Shop Drawings: Indicate framed opening requirements and tolerances, spacing of all members, anticipated deflection under load, affected related work, expansion and contraction joint locations and details, and sizes and locations for field welding.
 - 1. Show field measurements on shop drawings.
- D. Selection Samples: Submit full range of aluminum finish samples for nbj Architecture's color selection.
- E. Samples: Submit two samples, not less than 12 x 12 inch in size illustrating appearance of prefinished aluminum and specified glazing system, including glazed edge and corner.
- F. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations.
- G. Structural Glazing Adhesive: Submit product data and calculations showing compliance with performance requirements.
- H. Report of field testing for water leakage.
- I. Manufacturer's Installation Instructions: Indicate special procedures, safety precautions, and perimeter conditions requiring special attention.

1.06 QUALITY ASSURANCE

- A. Designer Qualifications: Design skylight system under direct supervision of a professional structural engineer experienced in design of work of the type specified in this section and licensed in Glens and Warsaw, Virginia.
- B. Installer Qualifications: Company specializing in performing the work of this section and approved by skylight manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide wrapping to protect prefinished aluminum surfaces. Do not use adhesive papers or spray coatings that bond when exposed to sunlight or weather.

1.08 WARRANTY

- A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work, including leaks, discoloration, failure of seal at insulated glazing units, and excessive thermal or structural movement, within a ten year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Metal Framed Skylights:
 - 1. Wasco Skylights: www.wascoproducts.com
 - 2. Bristolite Skylights: www.bristolite.com.
 - 3. The Vistawall Group: www.naturalite.com.

2.02 SKYLIGHT COMPONENTS

- A. Frame: Extruded aluminum structural members with integral condensation collection and guttering system thermally separated from exterior pressure bar.
- B. Glazing System: Pressure glazing bar system for sloped joints and structural adhesive glazing for horizontal joints.
- C. Glazing: Insulating glass.

2.03 MATERIALS

- A. Aluminum Extrusions: 6063-T5, 6063-T6, or 6061-T6 members complying with ASTM B 221 (ASTM B 221M). Minimum thickness 0.125 inch for structural members and 0.062 inch for non-structural members.
- B. Formed Aluminum: Sheet material of alloy 5052, 5005, or 6061-T651 complying with ASTM B 209 (ASTM B 209M). Minimum thickness: 0.125 inch for structural members and 0.062 inches for non-structural members.
- C. Internal Reinforcement: ASTM A 36/A 36M; Steel shapes as required for strength and mullion size limitations, hot-dip galvanized after fabrication in accordance with ASTM A 123/A 123M.
- D. Glass: Sealed insulated units, outer pane of tinted transparent, laminated glass; inner pane of clear transparent, laminated glass; space of sealed argon gas, metal edge frame.
- E. Glazing Accessories: As recommended by manufacturer of skylight system.

- F. Structural Glazing Adhesive: Silicone, ASTM C 920, Class 25, Grade NS, neutral cure; maximum hardness of 40, when tested in accordance with ASTM D 2240 using Type A durometer; minimum tensile strength of 250 psi, when tested in accordance with ASTM D 412.
- G. Weatherseal Sealant: Silicone, same type as glazing adhesive.
- H. Touch-Up Primer for Galvanized Steel Surfaces: Zinc rich type.
- I. Protective Back Coating: Zinc molybdate alkyd.

2.04 FABRICATION

- A. Rigidly fit and secure joints and corners with screw and spline. Make joints rigid, with connections that are flush, hairline, and weatherproof.
- B. Fabricate components to allow for expansion and contraction with minimum clearance and shim spacing around perimeter of assembly.
- C. Drain to exterior any water entering exterior joints, condensation occurring in glazing channels, or migrating moisture occurring within system.
- D. Prepare components to receive anchorage devices. Ensure that fasteners and anchorage devices will be concealed upon completion of installation.
- E. Adhere glass to glazing frames with structural adhesive and cure under controlled conditions in shop. Field glazing of frames to glass is not acceptable.

2.05 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick; both interior and exterior surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that structural curb is ready to receive skylight system. Coordinate installation of roofing and other adjacent work to ensure weathertight construction.

3.02 PREPARATION

- A. Apply 1 coat of protective coating to concealed aluminum and steel surfaces in contact with dissimilar materials.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set skylight structure plumb, level, and true to line, without warp or rack of frames or glazing panels. Anchor securely in place in accordance with approved shop drawings.
- C. Maintain assembly dimensional tolerances, aligning with adjacent work.
- D. Install sill flashings.
- E. Install glazing in accordance with Section 08800.
- F. Touch up damaged finishes so repair is imperceptible from 6 feet. Remove and replace components that cannot be satisfactorily touched up.

3.04 FIELD QUALITY CONTROL

- A. See Section 01400 - Quality Requirements, for general requirements for testing and inspection.

- B. Test installed skylight for water leakage in accordance with AAMA 501.2.

3.05 CLEANING

- A. Remove protective material from prefinished aluminum surfaces.
- B. Wash down exposed surfaces; wipe surfaces clean.
- C. Remove excess sealant by methods recommended by skylight manufacturer.

END OF SECTION